

ABSTRACT

A method for estimating the input power to a cable modem includes generating a look-up table containing AGC integrator accumulator values corresponding to selected frequencies and amplitudes. The look-up table is generated by first constructing a calibration matrix by inputting a plurality of calibration signals having known input frequencies and known input power levels into the cable modem's receiver, and recording AGC integrator accumulator values corresponding to several frequencies and power levels over a selected operating range as calibration points. Next, an interpolation and extrapolation process generates the look-up values corresponding to the frequencies and amplitudes in between the calibration points. During modem operation, the modem estimates the input power by checking the AGC integrator accumulator value corresponding to the input frequency and amplitude. Because the look-up table values are based on the cable modem's actual operating characteristics, the estimated input power will reflect any variations or irregularities in the modem's operation, such as gain non-linearities, frequency ripple, or temperature effects.